

**TRANSLATION****PATENT COOPERATION TREATY****PCT****INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br><b>B 14467 PM</b>                                      | <b>FOR FURTHER ACTION</b>  | See Form PCT/IPEA/416  |
| International application No.<br><b>PCT/FR2004/003406</b>                                       | International filing date ( <i>day/month/year</i> )<br><b>29.12.2004</b> | Priority date ( <i>day/month/year</i> )<br><b>30.12.2003</b> |
| International Patent Classification (IPC) or national classification and IPC<br><b>G01T1/17</b> |  |  |
| Applicant<br><b>COMMISSARIAT A L'ENERGIE ATOMIQUE</b>   |  |  |

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| 1. | This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.  |
| 2. | This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.  |
| 3. | This report is also accompanied by ANNEXES, comprising:<br>a. <input checked="" type="checkbox"/> ( <i>sent to the applicant and to the International Bureau</i> ) a total of <u>5</u> sheets, as follows:<br><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).<br><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.<br>b. <input type="checkbox"/> ( <i>sent to the International Bureau only</i> ) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions). |
| 4. | This report contains indications relating to the following items:<br><input checked="" type="checkbox"/> Box No. I Basis of the report<br><input type="checkbox"/> Box No. II Priority<br><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability<br><input type="checkbox"/> Box No. IV Lack of unity of invention<br><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement<br><input type="checkbox"/> Box No. VI Certain documents cited<br><input type="checkbox"/> Box No. VII Certain defects in the international application<br><input type="checkbox"/> Box No. VIII Certain observations on the international application  |

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| Date of submission of the demand        | Date of completion of this report |
| Name and mailing address of the IPEA/EP | Authorized officer                |
| Facsimile No.                           | Telephone No.                     |

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/003406

Box No. I

Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-39 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1-22 received by this Authority on 10.10.2005 with telefax
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/7-7/7 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, nos. 1-21
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/003406

| Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  |                    |     |
|-----------|--|--------------------|-----|
| 1.        | Statement  |                    |     |
|           | Novelty (N)  | Claims <u>1-22</u> | YES |
|           |  | Claims _____       | NO  |
|           | Inventive step (IS)  | Claims <u>1-22</u> | YES |
|           |  | Claims _____       | NO  |
|           | Industrial applicability (IA)  | Claims <u>1-22</u> | YES |
|           |  | Claims _____       | NO  |
| 2.        | Citations and explanations (Rule 70.7)   |                    |     |
|           | <p><b>1.</b></p> <p>Reference is made to the following documents:</p> <p>D1: Z.Y. CHANG AND W.M.C. SANSEN: "Low-noise wide-band amplifiers in bipolar and CMOS technologies" 1991, KLUWER ACADEMIC PUBLISHERS, XP008036864</p> <p>D2: US-A-4 034 222 (BOUX RENE ET AL) 5 July 1977 (1977-07-05)</p> <p><b>2.</b></p> <p><b>2.1</b></p> <p>D1, which is considered to be the prior art closest to the subject matter of independent claim 1, describes (see page 154, figure 1):</p> <p style="padding-left: 40px;">a radiation exposure measurement device including at least one element for detecting photons or particles, associated with at least one circuit for acquiring and counting detection events, such that the acquisition circuit comprises a signal processing circuit generating counting pulses corresponding to the detection events, <u>and means for continuously resetting.</u></p> <p>Consequently, the subject matter of claim 1 differs from</p> |                    |     |

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| Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
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this known device in that:

the acquisition circuit further comprises means for discontinuously resetting the pulse signal processing circuit.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can be considered to be that of:

decorrelating the process of converting incident charges into voltage from the process of rapidly resetting the output levels of the amplifier stages in the acquisition chain of the radiation detection device.

D2 describes (the references between parentheses apply to said document):

a radiation exposure measurement device (figure 1: A) including at least one element for detecting photons or particles (KA), associated with at least one circuit for acquiring and counting detection events (RA1 - AA), such that the acquisition circuit comprises a signal processing circuit generating counting pulses (QA) corresponding to the detection events, and means for discontinuously resetting (IA) the pulse signal processing circuit.

The solution to this problem, as proposed in claim 1 of the present application, is considered to involve an

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inventive step (PCT Article 33(3)) for the following reason:

Even though D2 describes means for discontinuously resetting the pulse signal processing circuit, it gives a person skilled in the art no indication with regard to the possibility of converting the incident charges, let alone separating the conversion process from the rapid reset process. For this reason, a person skilled in the art aware of the content of D1, would not envisage including the features described in D2.

## 2.2

Claims 2 to 22 are dependent on claim 1 and thus also comply, as such, with the PCT requirements of novelty and inventive step.